What is claimed is:

1. A plate which comprises:

a base having a first surface and a second surface; and

a plurality of substantially parallel elongated capillary tubes supported by said base, wherein each said tube has an interior surface defining a lumen extending through said base between said first surface and said second surface, further wherein each said tube defines a longitudinal axis and has an aspect ratio greater than about 5:1 with an inner diameter less than approximately five hundred microns, and further wherein each said tube acts to optically distinguish light directed from inside said lumen toward said interior surface thereof from light directed along said axis for optical detection of said tube.

2. A plate as recited in claim 1 further comprising a reference indicia established on said base for positioning and aligning said base.

3. A plate as recited in claim 1 wherein each said capillary tube comprises:

an interior wall presenting said interior surface to surround and define said lumen; and

an outer wall surrounding said interior wall and said lumen for absorbing light directed toward said interior surface of said interior wall.

4. A plate as recited in claim 3 wherein said interior wall is made of a sleeve glass.

5. A plate as recited in claim 4 wherein said outer wall is made of an extra mural absorption (EMA) glass.

6. A plate as recited in claim 1 wherein said tube is made of a sleeve glass, with said sleeve glass being heat treatable to make said tube opaque.

7. A plate as recited in claim 1 wherein said plate is used for holding samples in said capillary tubes, and wherein at least one said sample is excited to fluoresce and emit light for detection of said tube holding said fluorescent sample.

8. A plate for holding optically detectable samples which comprises:

a base having a first surface and a second surface, with said second surface being substantially parallel to said first surface, wherein said base supports a plurality of substantially parallel through-hole wells, with each said through-hole well defining a longitudinal axis and extending between said first surface and said second surface, and wherein said plurality of through-hole wells have a density greater than approximately two wells per square millimeter on said first and second surfaces of said base; and

a material surrounding and defining a lumen for each said through-hole well to optically distinguish light directed substantially away from said axis in said lumen from light directed substantially along said axis in said lumen for optical detection of said through-hole well.

9. A plate as recited in claim 8 wherein said base is made of an interstitial material.

10. A plate as recited in claim 8 wherein each said through-hole well is a capillary tube having an aspect ratio greater than about 5:1 with an inner diameter less than approximately five hundred microns.

11. A plate as recited in claim 10 wherein said plate is used for holding samples in said capillary tubes, and wherein at least one said sample is excited to fluoresce and emit light for detection of said tube holding said fluorescent sample.

12. A plate as recited in claim 10 wherein said material of said through-hole well for each of said capillary tubes comprises:

an interior wall surrounding and defining said lumen; and

an outer wall surrounding said interior wall and said lumen.

13. A plate as recited in claim 12 wherein said interior wall is made of a sleeve glass and said outer wall is made of an extra mural absorption (EMA) glass.

14. A plate as recited in claim 12 wherein said interior wall of each said lumen is coated to control the capillary action of each said through-hole well and said plate further comprises a reference indicia established on said base for positioning and aligning said base.

15. A method of preparing samples for optical detection which comprises the steps of:

providing a plate comprising a base having a first surface and a second surface, and said plate has a plurality of substantially parallel, elongated capillary tubes supported by said base, wherein each said tube has an interior surface defining a lumen extending through said base between said first surface and said second surface, further wherein each said tube defines a longitudinal axis and has an aspect ratio greater than about 5:1 with an inner diameter less than approximately five hundred microns, and further wherein each said tube acts to optically distinguish light directed from said sample inside said lumen toward said interior surface thereof, from light directed from said sample along said axis for optical detection of said tube and said sample therein; and

immersing said first surface of said base into a container holding said samples in a liquid solution to wick said samples into said tubes by a capillary action.

16. A method as recited in claim 15 further comprising the step of placing said plate in a humidified environment to reduce evaporation of said liquid solution.

17. A method as recited in claim 15 further comprising the step of positioning a cap on at least one said surface of said base to reduce evaporation of said liquid solution.

18. A method as recited in claim 15 further comprising the step of placing a high vapor pressure fluid into said through-hole wells to protect said liquid solution from evaporation.

19. A method for manufacturing a plate for holding a large number of small volume fluid samples which comprises the steps of:

providing an elongated optical fiber having a first length, said optical fiber comprising a cylindrical shaped core glass surrounded by concentric layers of a sleeve glass and an interstitial material;

drawing down said optical fiber to a second length, said second length being longer than said first length;

cutting said drawn optical fiber into a plurality of sections;

stacking said sections to create a multi;

pressing a plurality of said multis together with said sections thereof substantially parallel to each other;

heating said plurality of multis to fuse said interstitial material between adjacent said sections to create an integral unit;

cutting said integral unit to establish a substantially same predetermined length for each said section; and

immersing said integral unit in acid to etch said core glass therefrom to create said plate with a base having a first surface and a second surface and a plurality of substantially parallel elongated capillary tubes supported by said base, wherein each said tube has an interior surface defining a lumen extending through said base between said first surface and said second surface, further wherein each said tube defines a longitudinal axis and has an aspect ratio greater than about 5:1 with an inner diameter less than approximately five hundred microns, and further wherein each said tube acts to optically distinguish light directed from inside said lumen toward said interior surface thereof, from light directed along said axis for optical detection of said tube.

20. A method as recited in claim 19 wherein said predetermined length for each said section is approximately six millimeters.

21. A method as recited in claim 19 further comprising the step of heat treating said plate to make said sleeve glass substantially opaque.

22. A method as recited in claim 19 wherein said optical fiber further comprises a concentric layer of EMA glass positioned between said sleeve glass and said interstitial material.